REMARKS

Claims 1 through 13 are currently pending in this application.

In response to the objection to Claim 2, Applicants have amended the language of the last paragraph in the manner suggested by the Examiner. Accordingly, reconsideration and withdrawal of this ground of rejection are respectfully requested.

Claims 1-13 have been rejected under 35 U.S.C. §103(a) as unpatentable over Pryor (U.S. Patent No. 5,380,978) in view of Naik et al (U.S. Patent No. 6,510,357). However, for the reasons set forth hereinafter, Applicants respectfully submit that each of Claims 1 through 13 distinguishes over the cited references, whether considered separately or in combination.

The present invention is directed to a method for locating assembly points on work pieces in an assembly process, such as, for example, for the purpose of marking drilling locations on large components in aircraft assembly. According to the invention, precise location of a drilling or weld points is achieved by first measuring and determining an assembly location with respect to one of the parts. Thereafter, according to the invention, a vector N is derived that intersects perpendicularly with the surface of a first one of the two parts that are to be assembled and passes through a measured assembly location on the other of the two parts. Thereafter, the calculated assembly point, determined in this

manner, is indicated on the surface of the first part, being specifically the point at which the vector derived as previously described passes perpendicularly through the surface of the first part.

Applicants note that paragraph 4 of the Office Action acknowledges that the latter feature (derivation of the vector N, as described per enclosed) is not included the Pryor patent. However, in paragraph 5, the Office Action maintains that the feature recited in the last paragraph of Claim 1, namely indicating the calculated assembly point on the surface of the "first part" is in fact taught in Pryor, referring to Column 21, lines 12 through 49 and Column 48, lines 33 through 37.

Applicants note in this regard that the significance of the last paragraph of Claim 1 is that the surface of the "first part" is marked to indicate the assembly point which has been calculated in the manner described above. That is, the part is marked to indicate the position at which the vector N passes through the surface of that part. Accordingly, if the latter technique is missing from Pryor, then any markings that might be made on the surface of one of the parts in Pryor is necessarily unrelated to the point at which such a vector passes through the surface. Thus, it is not merely a matter of placing a mark on the surface of the "first part", but rather the relationship between the mark and the technique which is used to determine the location of the mark; the latter is neither taught nor suggested by Pryor, as is acknowledged in the Office Action.

Therefore, any marks which might be applied in Pryor do not carry the significance of the mark which is recited in Claim 1.

Moreover, insofar as Applicants have been able to determine, neither of the portions of the specification referred to in the Office Action teaches or suggests a step of indicating a calculated assembly point "on the surface of the first part". Rather, the first such passage, at Column 21, lines 12 through 49 appears to disclose the use of a computer display to indicate to a system operator visually when the parts are in correct position. Thus, at lines 17-24, the text refers, for example, to a "bar chart type display", in which it is relatively easy to manipulate the system so that all bars are lined up in a row. Similarly, the text at Column 48, also appears to provide for the use of TV images for fine positioning.

Moreover, it is also noteworthy that the spot 215 in Figure 4C clearly does not represent a marking which indicates a determined location for a weld. Rather, it represents a "retroreflector target" which allows easy sighting by a camera system, and provides accurate ranging by a laser range finder 201. (See in particular Column 18, lines 43-53.) Accordingly, Applicants respectfully submit that the feature recited in the last paragraph of Claim 1, in which an assembly pointed calculated in the manner described previously is marked on one of the surfaces to be joined is not taught or suggested in Pryor.

The Naik et al reference, on the other hand, discloses an automated welding program which generates a welded finite element model of a vehicle body for the purpose of locating welding points, etc. For this purpose, Naik et al utilizes a finite element (FE) mesh representing the surface data of the vehicle body. (Abstract) However, like Pryor, Naik et al fails to teach or suggest a system in which a vector N is derived, which intersects perpendicularly with the surface of one of two parts that are to be assembled and passes through a measured assembly location on the other part, as recited in Claim 1. Rather, as described in the specification at Column 3, lines 29-49, the system operates by identifying the predefined weld location, and a nearest node module 44 in the finite element mesh. The location of the weld is determined by reference to the node locations. Thus, Naik et al notes that, "the modified FE mesh contains node locations for the parts in the vehicle, and it is these node locations that are relied upon in generating the actual welds". (Column 3, lines 46-49.) The system accordingly does not derive or make use of a vector N such as described above.

In this regard, it is noted that the Office Action refers to Column 3, lines 34 through 38 as suggesting the assembly of parts by means a perpendicular vector. However, Applicants respectfully submit that the cited portion of the specification does not disclose such a technique such as defined in Claim 1 (as discussed above). Rather, it states only that,

> "selecting the nearest node on each of the parts in the assembly assures that the resulting weld will be perpendicular to the surfaces of the parts. Perpendicularity improves the quality of the results generated for safety, noise and vibration computer simulations."

Thus, the disclosure referred to is directed only to the fact that it is desirable that the weld in fact be perpendicular to the surfaces of the parts. There is, however, no suggestion that a vector such as described previously, which passes through a location measured on one of the parts and passes perpendicularly through the surface of the other part is used to locate the point of the weld in the first place. Indeed from the language quoted above, it is clear that no such technique is utilized. Moreover, as in Pryor, Naik et al also fails to teach or suggest marking one of the surfaces to indicate a point determined in such a manner. Accordingly, the combination of Naik et al and Pryor fails to teach or suggest the invention as defined in Claim 1. Moreover, neither reference contains any disclosure which would suggest to a person skilled in the art any particular reason for combining the two; and even having done so, the claimed invention would not result. Accordingly, Applicants respectfully submit that independent Claims 1 and 2, and accordingly all claims of record in this application, distinguish over the cited references.

In light of the foregoing remarks, this application should be in condition for allowance, and early passage of this case to issue is respectfully requested. If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #2101/50761).

Respectfully submitted,

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